Why is Grass Green?

Nurturing and displaying a weed-free, carefully manicured lawn is a constant source of pride for many Americans. Apparently, many of us inherit two full genetic copies of this zealous need to surround our dwellings with green lawn, while others receive but one copy and are indifferent, or are homozygous recessive and let wild things abound.

The need to display the green has political importance as well. I well remember that whenever a visiting dignitary of sufficient importance visited the Bethesda campus of NIH, the dried-out August lawn in front of building no. 1 was spray-painted green, a practice that was a constant source of amusement for the residing scientific staff.

One syndicated article claimed that lawns in the United States occupy more square feet than any other crops, including wheat, corn, or tobacco. How much do we shell out for this luxury? The Lawn Institute stated that Americans spent $750 million on 400 million pounds of grass seed in 1992–1993. Admittedly, this provencial American custom provides jobs and income for thousands of people. As a hobby, the manicured lawn provides enjoyment and exercise for millions. What can be the harm? Perhaps the greatest loss translates from lack of cultivated crops on arable land: there are 25 million acres of turf grass that occupy an area the size of Pennsylvania. We are a rich country, so we can aesthetically justify the squandering of this resource. It is more difficult to justify the use of water in arid regions or the amount of chemical pesticides applied to maintain the lawns.

In our arid Western states where range wars are fought over precious water resources, as much as 60% of the city water is used for lawn care, and as much as 30% is used for similar purposes in Eastern cities. Nonrural homeowners used 10 times as much pesticides per acre compared to that used by farmers. More importantly, 32 of the 34 major pesticides commonly used on lawns have not been tested for carcinogenicity and other long-term effects in humans, or for their long-term effects on the environment. These include 2,4-D, 2,4,5-T, alachlor, sevin, etc. Recently, the National Academy of Science reported that the potential toxic effects of these same pesticides on children and the elderly have not been adequately characterized. Follow-up articles published in *Environmental Health Perspectives* document that some of these pesticides act as xeno-estrogens, cause breast cancer, and can have deleterious effects on reproduction and development.

There is no argument that we should maintain open space in urban areas or that public or private tracts of cleared land serve a good purpose. However, one might consider supplanting artificial cover with plant species already adapted to the climate and soil of a given geographical location. Developing natural ecosystems should eliminate the need for excessive irrigation or the use of chemical pesticides for open space to thrive. Current agricultural research, using techniques from the recent explosion in molecular biology, can soon be expected to provide not only improvements in artificial cover, but new biological control agents to avoid the use of chemical contaminants.

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